

10/528732

2002P15864WOUS

PCT/EP03/07202

22JC06 Rec'd PCT/PTO 22 MAR 2005

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Claims

1. Device (1) for monitoring a technical facility (2) comprising multiple systems, in particular a power plant facility, characterized by
 - at least one analysis module (13, 13a, 13b), which includes a dynamic model (15) at least of one system (3, 5, 7, 9, 11) of the technical facility (2), whereby operational data (17, 17a, 17b) or operational and structural data (17, 17a, 17b, 19, 19a, 19b) from the technical facility (2) can be conveyed to the analysis module (13, 13a, 13b) as input data, and
 - at least one algorithm (21, 21a, 21b) based on artificial intelligence included by the analysis module (13, 13a, 13b), which searches for dependencies between operational data (17, 17a, 17b) or operational and structural data (17, 17a, 17b, 19, 19a, 19b) in operational data (17, 17a, 17b) or operational and structural data (17, 17a, 17b, 19, 19a, 19b) from the system by means of the methods of artificial intelligence, and integrates into the dynamic model (15) the correlations identified in doing so as new correlations, and thereby improves this, and by means of which the dynamic model (15) of the system (3, 5, 7, 9, 11) can be improved during the operation of the system (3, 5, 7, 9, 11), whereby output data (23, 23a, 23b) is identifiable by means of the analysis model (13, 13a, 13b), said data characterizing the current and/or future operational behavior of the system (3, 5, 7, 9, 11).
2. Device (1) according to Claim 1, characterized in that the improvement of the dynamic model (15) includes the identification of that input data that has not yet been previously used by the dynamic model (15), and in that the

dynamic model (15) can be expanded with the help of this input data.

3. Device (1) according to Claim 1 or 2, in which the dynamic model (15) includes one or more elements from the group {characteristic, physical equation, neural network, fuzzy logic, genetic algorithm}.
4. Device (1) according to one of the Claims 1 to 3, whereby the dynamic model (15) includes at least one neural network, which can be trained using historical operational data from the system (3, 5, 7, 9, 11).
5. Device (1) according to one of the Claims 1 to 4, characterized in that a number of analysis modules (13, 13a, 13b) are available, which include in each case a dynamic model (15) of at least one system (3, 5, 7, 9, 11) of the technical facility (2), and in that at least one additional algorithm (25) based on artificial intelligence is provided, by means of which correlations at least between the input and/or output data of a first of the analysis modules (13, 13a, 13b) and the input and/or output data of a second of the analysis modules (13, 13a, 13b) are identifiable.
6. Device (1) according to Claim 5, characterized in that additional output data (27) is identifiable by means of the correlations, said data characterizing the current and/or future operational behavior of the technical facility (1), whereby this additional output data (27) includes cross-system information.
7. Device (1) according to one of the Claims 1 to 6, whereby the operational data (17, 17a, 17b) and/or structural data (19, 19a, 19b) of the technical facility (2) includes one or

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more items of information from the group {process data, operational messages, warning messages, disruption messages, monitoring notifications, comments, design of the technical facility, hierarchy of the facility components}.

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8. Device (1) according to one of the claims 1 to 7, whereby the operational (17, 17a, 17b) and/or structural data (19, 19a, 19b) of the technical facility (2) includes current and/or historical data from the technical facility (2).

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9. Device (1) according to one of the Claims 1 to 8, whereby the operational data (17, 17a, 17b) and/or structural data (19, 19a, 19b) from the technical facility (2) is provided by a process control system of the technical facility (2).

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10. Method for monitoring a technical facility (2) comprising multiple systems, in particular a power plant facility, characterized by the following steps:

- Operational data (17, 17a, 17b) or operational and structural data (17, 17a, 17b, 19, 19a, 19b) from the technical facility (2) is conveyed to a dynamic model of at least one system (3, 5, 7, 9, 11) of the technical facility (2) as input data,
- the dynamic model (15) of the system (3, 5, 7, 9, 11) is improved during the operation of the system (3, 5, 7, 9, 11) by means of an algorithm (21, 21a, 21b) based on artificial intelligence, whereby dependencies between operational data (17, 17a, 17b) or operational and structural data (17, 17a, 17b, 19, 19a, 19b) are searched for in operational data (17, 17a, 17b) or operational and structural data (17, 17a, 17b, 19, 19a, 19b) by means of the methods of artificial intelligence, and the correlations identified in doing so are integrated into the dynamic model as new correlations, and

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- by means of the dynamic model (15), output data (27) is identified which characterizes the current and/or future operational behavior of the system (3, 5, 7, 9, 11).

5 11. Method according to Claim 10, characterized in that the improvement of the dynamic model (15) includes the identification of that input data which has not yet been previously used by the dynamic model (15), and in that the dynamic model (15) can be expanded with the help of this
10 input data.

12. Method according to one of the Claims 10 or 11, characterized in that a number of dynamic models (15) are provided, which in each case describe at least one system
15 (3, 5, 7, 9, 11) of the technical facility, and that at least one additional algorithm (21, 21a, 21b) based on artificial intelligence is provided, by means of which correlations at least between the input and/or output data of a first of the dynamic models (15) and the input and/or
20 output data of a second of the dynamic models (15) are identifiable.

13. Method according to Claim 12, characterized in that additional output data is identifiable by means of the correlations, said data characterizing the current and/or future operational behavior of the technical facility (2), whereby this additional output data includes cross-system information.
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30 14. Device (1) according to one of the Claims 1 to 9, whereby the algorithm (21, 21a, 21b) based on artificial intelligence improves the interaction of the individual correlations of the dynamic model (15) such that an interrelationship develops, and that parameterizes the

algorithm (21, 21a, 21b) based on artificial intelligence for this interrelationship.